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Research article

Safety Policy for the Delivery of COVID-19 Infectious Materials

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Abstract.
A crucial aspect that needs to be considered in handling the COVID-19 pandemic is the process of delivering and receiving infectious materials. The method of packaging and sending infectious materials must conform to the standards and regulations of the transport of dangerous goods to minimize the risk of exposure to the sender, carrier, recipients, the public and the environment. This study aimed to identify inhibiting factors and develop strategies for implementing a safety policy for the delivery and acceptance of COVID-19 infectious materials. Qualitative methods were used and data were collected through interviews, observations, and document review. According to the findings, the rules and guidelines to secure the delivery and acceptance of infectious materials proposed by the World Health Organizaiton, International Air Transportation Association, International Cargo Air Organization and Directorate General of Civil Aviation have still not been implemented effectively. This has been due to several inhibiting factors. It is necessary to develop a strategy in the form of policy recommendations to secure infectious materials, not only during this pandemic but also in normal conditions and in preparation for other outbreaks and pandemics.

Keywords: COVID-19, delivery of infectious material, health policy, Indonesia

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1. Introduction

As we all know, the whole world is currently dealing with the Corona Virus Disease (COVID-19) outbreak, including Indonesia. According to data from the Ministry of Health, as of 5 May 2020, the number of positive cases in Indonesia reached 12,071 people with 2,197 recoveries and 872 deaths. Cases continued to increase until 16 Feb 2021, the number of positive cases reached 1.23 million, 34 thousand died and one million recovered. Although the number of recovered patients has also increased, Indonesia still needs to be aware of the dangers of spreading the virus to the Indonesian population.

The biggest challenge at the start of the pandemic and is still being overcome by the Indonesian Government is the capacity of health care facilities and laboratories for

examining COVID-19 specimens, which includes handling hazardous infectious materials. The Ministry of Health issues the Decree of the Ministry of Health KMK Number HK.01.07/MENKES/4642/2021 concerning the Organization of the COVID-19 Examination Laboratory to overcome the COVID-19 outbreak, and it is explained that the National Institute of Health Research and Development (NIHRD), Ministry of Health which includes the Center for Research and Development of Biomedical and Basic Health Technology (CRDBBHT / Puslitbang BTDK) was appointed as the National Reference Laboratory. This has led to increased shipments of infectious materials like COVID-19 specimens from several regions to the Penyakit Infeksi Prof. Oemijati Laboratory at the Puslitbang BTDK in Jakarta. Moreover, the examining laboratory for COVID-19 at the beginning of the pandemic was only Penyakit Infeksi Prof. Oemijati Laboratory at the Puslitbang BTDK. Still, due to the increasing number of cases in Indonesia and the rapid spread in several areas, the Government has to make a policy regarding the network of COVID-19 testing laboratories located in almost every region in Indonesia.

The existence of these COVID-19 testing network laboratories is an effort by the Government to overcome and strengthen the function of laboratories in examining COVID-19 specimens since they were designated as non-natural disasters. The COVID-19 examination laboratory network consists of the COVID-19 Examination Reference Laboratory and the COVID-19 Examination Laboratory, between the COVID-19 Examination Laboratory and the COVID-19 Examination Reference Laboratory there is often a shipment of COVID-19 specimens. The delivery is carried out by land and air transportation. Air transportation is the fastest way to deliver dangerous infectious goods from a laboratory at the provincial or district level to a central reference laboratory. So that most laboratories from the regions use air transportation in the delivery of infectious materials (COVID-19 specimens) to make it more efficient for examination and get results as soon as possible. For COVID-19 Examination Laboratory being around Jakarta sending infectious materials of COVID-19 sample to Penyakit Infeksi Prof. Oemijati Laboratory at the Puslitbang BTDK via land transportation.

Methods of delivery and packaging of biological or infectious substances must use WHO standard guidelines and be packaged following the Transport of Dangerous Goods (TDR) regulations to minimize the risk of exposure to shippers, carriers, recipients, the public, and the environment. To control hazards, environmental health, and surveillance of occupational health on the delivery of specimens and other biological materials via air transportation, Indonesia should follow international standards, namely

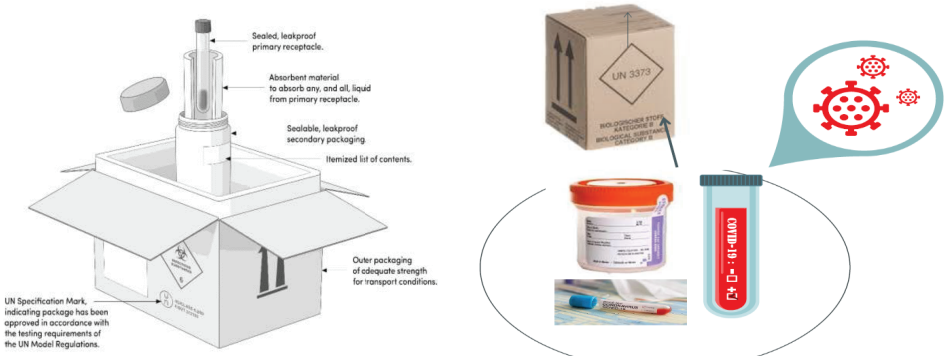

Figure 1: Triple Packaging. (Source: WHO guidelines and regulations for the Shipment of Infectious Materials 2019-2020).

the standards of the International Air Transportation Association (IATA) and the International Cargo Air Organization (ICAO) with triple packaging. Triple packaging can be explained in the image below:

Triple packaging, as shown in Fig. 1, is a container used in the packaging of infectious materials consisting of primary container, secondary container, and tertiary or outer container. The packaging used must be of good quality using safe materials and covers to prevent leakages caused by transportation, such as changes in temperature, humidity, pressure, or vibration, and meet material and construction specifications. Furthermore, as shown in Fig. 1, the packaging used for dangerous goods must be tested first by a government agency or legal entity in charge of packaging testing, and there must be a certificate or ”UN Specification Marking” issued by the Directorate General of Civil Aviation. and for the packaging of dangerous goods that already have the ”UN Specification Marking” from another country does not need to be tested. As is known, packaging that has ”UN Specification Marking” for hazardous infectious materials is not yet available for local Indonesian products, so they must be imported from abroad to get them. This is one of the reasons for the high price of packaging materials for dangerous infectious specimens such as COVID-19.

Shipping standards for hazardous materials are regulated in several regulations in Indonesia, namely: Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 58 of 2016 changes from the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 90 of 2013 concerning the safety of transporting dangerous goods by aircraft; and Regulation of the Directorate General of Civil Aviation KP: 412 of 2014 concerning technical instructions for the safety of transporting dangerous goods by plane.

After initial observations were made during the pandemic starting in March 2020 at Puslitbang BTDK and the results of the evaluation carried out by the Laboratory

Information and Management System (LIMS) Division of Puslitbang BTDK in charge of receiving packages of COVID-19 specimens from regional laboratories, several indications of problems in implementation were found. Regulations related to the delivery and receipt of COVID-19 infectious materials, namely: 1) The presence of infectious materials sent that do not meet the packaging and delivery standards, 2) Lack of thorough socialization to laboratory networks regarding the use of triple packaging during the COVID-19 pandemic, 3) High cost of packaging materials that must be used to meet existing standards, lack of Human Resources in the implementation of receiving COVID-19 infectious materials.

Based on some of the initial findings, it is deemed necessary to conduct more in-depth research related to the implementation of the policy on the delivery of COVID-19 infectious materials at Puslitbang BTDK so that an overview of the formulation of the problem in this study is carried out, namely: 1) Why Safety Policy For The Delivery And Acceptance of COVID-19 Infectious Materials at Puslitbang BTDK has not been running effectively, 2) What are the factors that hinder the effectiveness in implementing the Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials, 3) What is the strategy for implementing the Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK.

The expected objectives of this study are, 1) To find out why the implementation of Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK has not been effective, 2) To identify the factors that hinder the implementation of the Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK, 3) To develop a strategy for implementing Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK.

2. method

This study uses descriptive research with a qualitative approach because the author wants to understand in depth the focus of the problem on Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK and explore answers to then conclude. Data collection techniques through observation, interviews, and documentation. The research location is focused on Puslitbang BTDK as the national COVID-19 reference laboratory. In this study, 11 informants were selected with the consideration that they understand the Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK.

Based on the data obtained, testing the validity of the data or testing the credibility of the data is through triangulation with technical triangulation. In technical triangulation, an examination of the data that has been obtained through interviews, observations, and analyses of the documents contained in Puslitbang BTDK and the network laboratories.

Data analysis was carried out from the beginning of the study and during the research process aimed at evaluating or seeking information regarding the Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK. The data obtained were collected through various appropriate and appropriate sources and then processed systematically. The analyzed data were obtained by editing, classifying, reducing, then presenting the data and inferring the data.

2.1. Theory Overview

2.1.1. Policy Implementation

According to Thomas R. Dye, author of Understanding Public Policy, quoted by Riant Nugroho D (2017: 204) Public policy is Whatever Government choose to do or not to do". What Governments do, why they do it, and what difference it makes. Benefits for living together must be a holistic consideration so that the policy contains excellent benefits for its citizens and has a small impact and should not cause harmful problems, although So there must be someone who benefits and someone who is harmed, this is where the Government must be wise in setting a policy expressly stated that the actor of public policy is the Government, and public policy is a strong basis for the Government to do or not do something.

Fischer (2003:43) defines public policy as "Public policy is not only expressed in words, it is literally 'constructed' through the language (s) in which it is described". Public policy is stated in policy formulation, but how the results of these policies can be implemented properly should be the main focus. According to Winarno (2005:101), policy implementation is a legal administration tool where various actors, organizations, procedures, and techniques work together to carry out policies to achieve the desired impact or goal. Policy implementation is an important stage (critical stage) of the public policy life cycle.

Implementation, according to Van Meter and Van Horn in the book The Policy Implementation Process: A Conceptual Framework, explains that: "Implementation is actions taken either by individuals/officials or government or private groups aimed at achieving goals. objectives that have been outlined in policy decisions" (Van Metter

and Van Horn, 1975:447). So, implementation is the actions taken by the Government to achieve the goals that have been set in a policy decision. The Government in making policies, must also first examine whether the policy can have a bad impact or not for the community. It is intended that a policy does not conflict with the community, let alone to the detriment of the community. According to Van Meter and Van Horn (1975: 445), several indicators support policy implementation, namely:

1. Resources. The sources referred to include human resources, facilities, and infrastructure that encourage and facilitate effective implementation;
2. Communication between relevant organizations and implementation activities. Communication to convey to policy implementers what standards and objectives must be consistent and uniform, and implementation will run effectively if the implementers are right in communicating
3. Economic, social, and political conditions. Economic, social, and political conditions can affect implementing agencies in achieving policy implementation. Economic conditions, in this case, are the available finances or budget, the social conditions of a country, and the political conditions of the country.
4. The disposition of the implementors. The intensity of the tendencies/dispositions of the implementers. The disposition of the implementor includes three important things, namely: the response of the implementor to the policy, which will affect his willingness to implement the policy. And the intensity of the disposition of the implementor, namely the value preferences of the implementor.

2.1.2. Framework of thinking

This research This research is a study of policy implementation in the field of health policy and To find out how far the implementation of Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK needs to be carried out in-depth analysis using policy implementation theory. This study uses the theory of policy implementation according to Van Meter and Van Horn combined with the concept: WHO guidelines and regulations for the Shipment of Infectious Materials 2019-2020, International Air Transportation Association (IATA) Standards, and International Cargo Air Organization (ICAO) with Triple Packaging. The concepts used and processed by the author are as follows:

1. Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials is an action taken by the Government through the formulation of regulations that

must be implemented properly in securing the delivery and receipt of COVID-19 infectious materials to prevent the spread of the virus and protect the public from the dangers of infectious materials.

2. The implementation of the Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK is an action taken by Puslitbang BTDK in implementing regulations related to securing the delivery and receipt of COVID-19 infectious materials.

3. Delivery of COVID-19 infectious material is the process of sending COVID-19 infectious material, which begins with packing the material in safe packaging and according to shipping standards to be sent from the COVID-19 network laboratory to the referral laboratory for COVID-19 examiners adapted to WHO/IATA standards—namely using three layers of packaging or Three Layer Packaging / Triple Packaging.

4. Acceptance of COVID-19 infectious materials, namely receiving specimens for COVID-19 examination from hospitals, health offices, and other health laboratories, as well as conducting screening examinations on COVID-19 specimens using the form and standard operating procedures (SOP) that have been established by NIHRD, Ministry of Health and adjusted to the SOP for receiving infectious materials made by Puslitbang BTDK.

5. The Van Meter and Van Horn theory used in this study consist of 4 sub-aspects, namely Resources, Inter-organizational communication and implementation activities combined with disposition, and the last is economic, social, and political conditions while for other indicators we do not analyze because the main focus is on the implementation of a policy, while indicators of Standard and objectives are more of a policy study (the content of the policy) so that this research is more focused on indicators that directly affect action and the environment. Likewise, with the characteristics of the implementing agency in this study, we only show a few characteristics of the implementing unit, which is also the research locus. Its basic characteristics are in the form of organizational tasks and functions as well as structure. 1) Resource, 2) Communication and disposition, 3) Economic, social and political conditions.

6. The infectious material packaging system is to uses three layers of packaging (Triple Packaging). The three-layer packaging system consists of three layers, namely primary, secondary and tertiary layers. Triple packaging is packaging that

refers to WHO guidelines and regulations for the Shipment of Infectious Materials 2019-2020 and Standards of the International Air Transportation Association (IATA) and the International Cargo Air Organization (ICAO).

From the above concept for the Safety Policy For The Delivery And Acceptance of COVID-19 Infectious Materials at Puslitbang BTDK, it consists of two aspects, namely the delivery of COVID-19 Infectious materials and the Acceptance of COVID-19 infectious materials and will be studied in more depth with indicators in the Van Meter and Van Horn theory which became a sub-aspect and added a sub-aspect from the concept: WHO, IATA, ICAO with Triple Packaging. Therefore, the implementation of the policy on securing the delivery and acceptance of COVID-19 infectious materials at Puslitbang BTDK for these implementation efforts is influenced by several leading indicators, namely: Triple Packaging, resources, communication, and disposition, as well as social, economic, and political conditions. To describe a framework of thinking for Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK, the following scheme can be described:

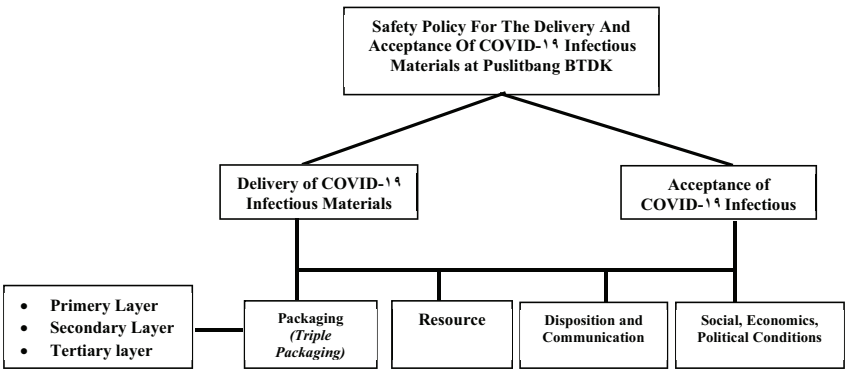

Figure 2: The framework of thinking adapted from Van Meter and Van Horn Theory, WHO guidance on regulations for the transport of infectious substances 2019–2020 and International Air Transportation Association (IATA) and International Cargo Air Organization (ICAO) standards.

3. Results and Discussion

Attached below is a discussion of each aspect and sub aspect :

3.1. Aspects of Delivery of COVID-19 Infectious Materials

Delivery of COVID-19 infectious material is the process of sending COVID-19 infectious material, which begins with packing the material in safe packaging and according to

shipping standards to be sent from the COVID-19 network laboratory to the referral laboratory for COVID-19 examiners adapted to WHO/IATA standards—namely using three layers of wrapping or Triple Packaging. This study examines the delivery of COVID-19 infectious materials in several sub-aspects, namely triple packaging, resources, disposition, and communication, as well as social, economic, and political conditions. The results of data collection from observations, interviews, and document review were analyzed based on the following sub-aspects:

3.1.1. Sub Aspect of Packaging (Triple Packaging)

The packing of COVID-19 infectious materials at Puslitbang BTDK is the packaging carried out by regional reference laboratories in Indonesia, represented by Balai Teknik Kesehatan Lingkungan dan Pengendalian Penyakit Kelas I Palembang, UPTD Laboratorium Kesehatan Daerah Kota Depok dan Laboratorium Kesehatan Daerah Propinsi DKI Jakarta. The implementation of shipping policies seen from the sub-aspects of packaging (three-layer packaging) is still not optimal. There are many violations found in the packaging of infectious materials that are not following WHO/IATA standards.

Actual conditions are as in Fig.4, that the packing as shown in the picture is the outermost layer of the layer for securing the shipment of COVID-19 infectious materials or what is called additional outer packaging which only uses cardboard and then is coated with plastic, this is not following WHO standards/ However, IATA is still tolerated according to Circular Letter (SE) No. 22 of 2020, as we know Directorate of Airworthiness and Aircraft Operations, the Ministry of Transportation, they issued a circular letter for the pandemic.

Figure 3: Examples of Cardboards for Packing COVID-19 Infectious Materials at Puslitbang BTDK. (Source: Author's Observation Documentation).

Packaging that is adjusted to Circular Letter Directorate General of Civil Aviation (SE) No. 22 of 2020 has the following packaging provisions:

1. packaging must be able to withstand material and seepage, leakage and damage under normal conditions of transport caused by shocks or changes in temperature, humidity, or pressure.
2. The packaging must consist of:
3. Primary receptacle;
4. Secondary packaging;
5. Rigid outer packaging;
6. Additional outer packaging.
7. Packages must meet the following conditions:
8. The primary receptacle must be leakproof, and the contents should not exceed 50ml;
9. Secondary packaging must be leakproof, for example, cans, bottles;
10. Equipped with absorbent material, for example, cotton, foam, it must be placed between the primary receptacle and the secondary packaging;
11. Equipped with a cushion material, for example, cork, the foam must be placed between the supporting packaging (secondary packaging) and rigid outer packaging;
12. The volume of the contents of the rigid outer packaging, for example, coolbox, should not be more than 2 liters, excluding cooling material (if used);
13. The additional outer packaging must be able to withstand the possibility of further leakage, for example, styrofoam.

The application of the delivery is not perfect because there are still only use cardboard and plastic (Figure 4) without any holders in the form of cork or foam as well as outer packaging that is not made of styrofoam so that it can cause leakage, which is different from Figure 5 seen using styrofoam and wood layers as additional outer packaging to prevent leakage of COVID-19 specimens, this is following (SE) Number 22 of 2020 even though the material is used are not standardized according to WHO/IATA.

From the results of interviews and observations, it can be concluded that the delivery of COVID-19 infectious materials in the packaging aspect has used the Triple Packaging

Figure 4: Example of Stereofoam for Packing COVID-19 Infectious Materials at Puslitbang BTDK. (Source: Author's Observation Documentation).

principle according to WHO/IATA standards, but currently, there is a health crisis that affects the condition of existing resources, the Directorate General of Civil Aviation makes a letter Circular on the Transportation of Infectious Substances (COVID-19) Samples in the Context of Accelerating the Handling of the Pandemic. lack of socialization related to Circular from the Directorate General of Civil Aviation No. 22 of 2020 causes a few laboratories that send COVID-19 samples to know about it. So they still use WHO/IATA regulations but with standard materials adapted to those available in the field. If the rules are enforced, it will have an impact on the implementation of the COVID-19 response (implementation gap).

Alternative solutions or strategies that can be chosen by the Government are: Changes to regulations in the form of SE No. 22 of 2020 issued by the Directorate General of Civil Aviation, Ministry of Transportation, becomes a higher regulation according to the order of laws and regulations so that it can be used after a health crisis occurs or in normal conditions with the provisions of discussing standardized containers that must be used.

3.1.2. Sub Aspect Resources

The resources referred to include human resources, facilities, and other infrastructure that encourage and facilitate effective implementation. This was asked to the informants in their opinion that it seems that this implementation has not taken into account the resources needed and owned, especially human resources in the regions that support

the policy. This happened because there were several obstacles faced related to the resource sub-aspect, as follows:

1. Materials in the form of shipping containers according to WHO/IATA standards for infectious diseases are not yet available in Indonesia, so it is necessary to encourage local industries to provide them.

2. The unavailability of Human Resources, especially in terms of securing the delivery of certified COVID-19 infectious materials in COVID-19 network laboratories in Indonesia, especially in regional laboratories; The solution to this problem is that the Ministry of Health, in collaboration with the Ministry of Transportation, conducts training and provides certification to human resources appointed by the regions as special personnel for handling the delivery of infectious materials and applies not only during a pandemic but is routinely carried out annually for the delivery of other infectious materials.

3. There are differences of opinion about the training and socialization that should be carried out by the Government, in this case, the Ministry of Transportation as a work unit that formulates policies for securing the delivery of infectious materials nationally. The Ministry of Transportation explained that thorough socialization had been carried out regarding the latest regulations in the circular letter of Ministry of Transportation, Directorate General of Civil Aviation No. 22 of 2020, while according to the policy targets, in this case, the implementor (Human resource COVID-19 lab network) has never been implemented, it's just that the circular letter has been given. So it is necessary to evaluate the regulation on its implementation in the field as well as to conduct socialization and can be communicated properly.

3.1.3. Sub Aspects of Disposition and communication

Implementation can run effectively if it is accompanied by accurate communication between the implementers. This communication includes the internal disposition of the organization that implements the policy and the socialization of existing regulations. Socialization is a form of communication made by two or more people about a subject of conversation. This study uses communication as a means of informing the public or certain targets to take certain actions, namely the implementation of Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK.

From the informant, it can be known that the Government, especially the Ministry of Transportation, has never socialized related to regulations in mandating the delivery of

COVID-19 infectious materials but puslitbang BTDK has socialized related to packaging techniques and has also conducted training to the COVID-19 network laboratory for the delivery of COVID-19 infectious materials. several things from the policy of securing the delivery of infectious material COVID-19 in Puslitbang BTDK in terms of disposition and communication, namely:

1. The Government, especially the Ministry of Transportation, as the policymaker for securing the delivery of infectious materials by air, has never conducted socialization related to regulations in securing the delivery of COVID-19 infectious materials. Communication activities are only carried out with the Ministry of Health as a unit that is directly related to the Ministry and in the context of a Focus Group Discussion (FGD) at the invitation of the Ministry of Health, but Puslitbang BTDK has carried out socialization related to packaging techniques and has also conducted training to the COVID-19 network laboratory for material delivery. Infectious COVID-19. Solution: The Ministry of Transportation provides socialization to work units related to SE No. 22 of 2020 to all work units and related work units or even the general public. Or communicate about the authority to implement socialization and communication within the respective Ministries so that there is no misunderstanding about the role of socialization related to policies that have been formulated.

2. Of the three regional reference laboratories and Penyakit Infeksi Puslitbang BTDK laboratory, they already have SOPs in different forms. Some have made special SOPs for securing the delivery of COVID-19 infectious materials, and some have only made work instructions that are used as a basis for handling infectious materials. Puslitbang BTDK, as the main laboratory, already has its SOP for handling infectious material security, especially COVID-19. SOP is a technical standard created from the derivative results of the above regulations. This operational standard is made to be implemented on target so that there is no work accident.

3.1.4. Sub Aspect Social, economic and political conditions

The social, economic, and political conditions of a country greatly influence the implementation of policies made by policymakers. Economic, social, and political conditions can affect implementing agencies in achieving policy implementation. Economic conditions, in this case, are the available finances or budgets, social and political conditions of the State.

The purpose of making a regulation on securing the delivery and receipt of COVID-19 infectious materials is solely to gain economic, social, and political value. One of them is to spend State finances effectively for the sake of social and political continuity that is safe during a health crisis. In the security process, the effect of sending COVID-19 infectious materials is strongly influenced by social conditions in the community. Namely, there is still a negative stigma about sending COVID-19 infectious materials. This happened to several specimen delivery officers in the area and airport officers, but after almost two years of COVID-19, the negative stigma of the community began to decrease. This is due to positive news from the media regarding health protocols and ways to prevent COVID-19. The Government still has to continue to provide education to the public, especially groups with lower secondary education levels as well as people living in areas around health facilities as a COVID-19 reference laboratory. It is also known that the formulation of SE No. 22 of 2020 was prepared quickly and did not specifically consider the social conditions that would occur.

The lesson for the Government, especially the Ministry of Health, in making policies is that it must consider the social conditions of the Indonesian people so that they can be implemented properly, and the Government must have prepared for policy risks if they have been implemented even though the policy was made during a health crisis. The social impacts that occurred during the implementation, apart from the negative stigma, were delivery constraints when the Large-Scale Social Restriction policy was implemented, namely: Officers from regional labs found it difficult to send COVID-19 samples, especially by land. In addition, the SE from the Ministry of transportation is only focused on air routes or shipping by aircraft. The political sub-aspect also plays an active role in the implementation of the COVID-19 infectious material delivery policy. It is known that during a pandemic, political conditions in Indonesia experienced instability several times, so that several demonstrations took place in several areas, especially DKI Jakarta. This has hampered access to shipping by land and made COVID-19 specimens accumulate in the area.

Furthermore, in terms of the economic sub-aspects that Indonesia experienced a recession that almost caused an economic crisis. This, of course, also affects the amount of the state budget (APBN) that must be spent and state revenues. This condition affects the price of the COVID-19 specimen shipping container material that must be used. If the material or container is adjusted to WHO/IATA standards, the purchasing budget will be higher while the Government asks Ministries/Agencies to carry out budget efficiency. The State of the health crisis greatly affects the economy. Therefore, Indonesia, especially the Government, must have its strategy in implementing the

delivery of infectious materials, especially COVID-19, namely by replacing the triple packaging container which originally used the WHO/IATA standard with a high cost to local products that have the same quality and benefits. These local products can be made in Indonesia with collaboration between the Government and the private sector so that an effective and efficient shipping container can be realized.

3.2. Aspects of Acceptance of COVID-19 Infectious Materials

Acceptance of COVID-19 infectious materials, namely receiving specimens for COVID-19 examination from hospitals, health offices, and other health laboratories, as well as conducting screening examinations on COVID-19 specimens using the form and standard operating procedures that have been established by NIHRD, Ministry of Health. Health and adjusted to the SOP for receiving infectious materials made by Puslitbang BTDK.This study examines the receipt of COVID-19 infectious materials at Puslitbang BTDK based on several sub-aspects, namely triple packaging, resources, disposition, and communication, as well as social, economic, and political conditions. The results of data collection from observations, interviews, and document review were analyzed based on the following sub-aspects:

3.2.1. Sub Aspect of Packaging (Triple Packaging)

Following the SOP owned by Puslitbang BTDK that in receiving COVID-19 infectious materials, screening must be carried out first on the materials or containers used by the sender or regional reference laboratories based on the WHO/IATA triple packaging standard or SE No.22 of 2020 and other applicable regulations. However, there are still no regulations or policies regarding the acceptance of COVID-19 infectious materials, so it is deemed necessary to make these regulations or is it sufficient to have SOPs. The answers from several resource persons who were included in the receiving team LIMS Division at Puslitbang BTDK were supported by observational data, which showed that there was no SOP on the receipt of COVID-19 infectious materials. Currently, Puslitbang BTDK only has an SOP on Specimen Acceptance, but the document does not yet have a Number document officially. Furthermore, the standard container used for the delivery of COVID-19 infectious materials is still not following the triple packaging required by WHO/IATA or packaging as in SE.No. 22 of 2020. This is evidenced by the results of observations, as follows:

Figure 5: Examples of Receipt of Infectious COVID-19 Materials Incompatible with Triple Packaging (1). (Source: Author's Observation Documentation).

In Figure 6, the outer layer of the sender only uses plastic, and it should be able to get a layer of wood or cardboard. In addition, it only uses two layers, namely styrofoam as the first layer, and then the second layer of plastic is added. In Figure 6, it can be seen that in the styrofoam, there is no ice pack to keep the temperature of the covid specimen cool, and there is no plastic specimen box holder so that it can cause the covid specimen to be shaken, causing leaks and damaged specimens. Some receipts of COVID-19 infectious materials at Puslitbang BTDK are also following WHO/IATA standards, one of which is delivery by air from provinces outside Jakarta, as explained by the resource person above. The results of the observations can be seen in the image below:

Figure 6: Example of Receipt of COVID-19 Infectious Materials According to Triple Packaging. (Source: Author's Observation Documentation).

In Figure 7, the layers used are already using packaging with "UN Specification Marking" UN 3373, where the packaging is following WHO and IATA standards and according to government regulations. Furthermore, several packaging discrepancies by land routes were also found. Almost all receipts of COVID-19 infectious materials by land were obtained using only the coolbox without using the outer layer according to WHO/IATA standards which should use Triple Packaging or according to other regulations such as SE Directorate General of Civil Aviation No. 22 of 2020, which

explains tertiary packaging and also the results of tracing the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 60 of 2019 concerning the Implementation of Goods Transport by Motorized Vehicles on the Road also states for dangerous transportation article 15 paragraph 2 that packaging or containers use ”UN Specification Marking”, so it can be concluded that the delivery of infectious materials by land should also use Triple Packaging. The results of the observations can be seen in the following figure:

Figure 7: Examples of Receiving Infectious COVID-19 Materials Incompatible with Triple Packaging (2). (Source: Author’s Observation Documentation)

In Figure 8, it can be seen that it is only a coolbox, and styrofoam is not re-coated with the outermost layer such as cardboard or wooden pallets where the packaging is slammed or damaged, the specimen inside can fall/damage. The results of the observations and the similarity of the data from the interviews above prove several things; namely, most of the receipts of COVID-19 infectious materials that are directly related to shipping by air and land have not met WHO/IATA standards, but the sender is more standardized in regulations in the form of SE Directorate General of Civil Aviation Ministry of Transportation No. 22 of 2020 which includes arrangements for the delivery of COVID-19 infectious materials using local containers that are easily obtained during a health crisis. In addition, the SOP for receiving infectious materials is also used for receiving other infectious specimens, meaning that there is no SOP focused on COVID-19. The existing SOP also does not have an official document number, so its legality is still in doubt.

3.2.2. Sub Aspect Resources

The sources referred to include human resources, facilities, and other infrastructure that support implementation to realize effective and targeted policies. In this study, human resources are health or non-health workers who implement policies on securing the delivery and receipt of COVID-19 infectious materials at Puslitbang BTDK and COVID-19 network laboratories in Indonesia. This sub-aspect analyzes one of them regarding

the condition of human resources who carry out the receipt of COVID-19 infectious materials. The results of interviews and observations also show that the working HR has complied with the standard operating procedures of Puslitbang BTDK. Although it is known from the interview results that the receiving team has never received training, they are already accustomed to handling infectious materials in cases of other infectious diseases.

Resources in the form of supporting facilities and infrastructure are also owned by Puslitbang BTDK, such as an adequate specimen disassembly reception room as shown in Figure ??, the receiving team receives specimens and then disassembles them, they wear PPE such as gloves, masks, and other personal protective equipment are also well available at Puslitbang BTDK. Equipment For specimen storage containing a refrigerator, it is useful to temporarily store infectious specimens before being distributed to the laboratory team or when the specimen is received by security personnel at night so that the specimen is always in good condition.

Before the COVID-19 infectious material is distributed to the examining laboratory on the 4th floor of Puslitbang BTDK, the labeling must be carried out first to make it easier for the examining team to know the type of sample and case number in determining negative/positive results for COVID-19 cases. The labeling is carried out in a separate room by the receiving team specimen using the Biosafety Cabinet (BSC), which is available in good condition. BSL2 and BSL3 laboratory at Puslitbang BTDK are optimally available, as shown in the Figure below

Figure 8: The COVID-19 Infectious Material Receiving Team Receives Infectious Specimen Packaging Boxes. (Source: Author's Observation Documentation).

The conclusion on the sub-aspect of human resources is that the infectious material acceptance policy runs optimally even though there are many shortcomings in terms of training or training for receiving staff, but they have worked following the SOPs issued by Puslitbang BTDK in which there are complete rules for the use of PPE and procedures for opening specimens so that they can be used. Reduce work accidents and transmission due to COVID-19. Supporting facilities and infrastructure for receiving infectious materials are also available at Puslitbang BTDK, such as a special room for

sample storage that keeps samples from being damaged and can be properly checked by the laboratory team. In addition, for the COVID-19 budget, everything is well provided by the State through the APBN. Even BSL2 and BSL3 laboratories are also available and in good condition.

3.2.3. Sub Aspects of Disposition and Communication

Interviews were conducted with the LIMS division staff who served as the Covid-19 Specimen recipient team. From the results of the interview, it can be concluded that the receipt of COVID-19 infectious materials is optimal in terms of disposition and socialization aspects because communication between the receiving teams has been well established, although the entry schedule is still very tight at the beginning of the pandemic, now each has started to be organized and each LIMS division staff received the schedule.

Evaluation and monitoring are indeed not carried out regularly by the Head of Puslitbang BTDK as the person in charge of the entire series of policies for securing the receipt of COVID-19 infectious materials, but they are still carried out occasionally according to a busy schedule. In addition to the Head of Puslitbang BTDK, periodic supervision is carried out by the Head of the Recipient Team so that it is considered quite optimal. The Head of the Recipient Team then reports to the coordinator lab manager and then to the Head of Puslitbang BTDK, so that effective disposition and communication are realized.

3.2.4. Sub Aspects of Social Conditions, Economics, Political Situations

Similar to delivery, receipt of COVID-19 infectious materials at Puslitbang BTDK is influenced by social, economic, and political conditions that occur in Indonesia. Because LIMS division staff cannot receive COVID-19 infectious specimens if the delivery is constrained and encounters several obstacles or challenges. The results of interviews with resource persons related to the influence of social, economic, and political conditions for receiving COVID-19 samples obtained very different results from the delivery, especially the conditions experienced by the specimen sending team, namely the COVID-19 Network Lab in the region. The specimen receiving team did not experience significant changes in conditions related to negative stigma or obstacles in the field during delivery. So it can be concluded that the social, economic, and political were obtained by the laboratory for sending COVID-19 infectious materials, namely the Regional Networking

Lab. So that the Government, in this case, is the Ministry of Health, must pay more attention to conditions in the Regions in formulating policies from the social, economic, and political sub-aspects.

4. Conclusions

Based on the results of interviews, observations and document reviews of each aspect and sub-aspect regarding the implementation of Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials to answer the focus of the problem in this research and to find out the obstacles faced by Puslitbang BTDK, it can be concluded that the regulations and guidelines used to secure the delivery and receipt of infectious materials, namely the WHO Guidelines and regulations for the Delivery of Infectious Materials 2019-2020, the International Air Transportation Association (IATA) and the International Cargo Air Organization (ICAO) and the regulations of the Directorate General of Civil Aviation in the form SE 22 of 2020 concerning the Transportation of Samples of Infectious Substances (COVID-19) in the context of accelerating the pandemic, it still cannot be implemented effectively in terms of the delivery and receipt aspects which consist of several sub-aspects namely packaging, resources, disposition and communication as well as social, economic and political conditions . This is due to several factors that influence the policy of securing the delivery and receipt of COVID-19 infectious materials, including First, the scope of the applicable regulations, namely Directorate General of Civil Aviation Number SE 22 of 2020 only regulates shipments by air, while regulations by land and sea do not yet exist. In addition, from the packaging aspect, it can be concluded that the main obstacle is the difficulty of providing certified packaging containers in Indonesia. And even if there is a WHO/IATA standardized container price, it is considered quite expensive when compared to ordinary materials that are adjusted so that many shipments do not use the specified packaging standards.

Second, the unavailability of certified Human Resources, especially in terms of securing the delivery of COVID-19 infectious materials in the COVID-19 network laboratory in Indonesia. In addition, there has never been any training for human resources for receiving infectious specimens at Puslitbang BTDK, so that knowledge is still considered lacking, because with the existence of certified human resources and training in the future, not only for conditions during the COVID-19 outbreak/pandemic but also for delivery and receipt of other infectious materials during the normal condition and also as preparation for other outbreaks/pandemics. For facilities and infrastructure at Puslitbang BTDK, it is considered to have met, and the budget received is also adequate, but the

budget for the regions is still lacking. This affects other sub-aspects such as packaging, disposition, and communication.

Third, in terms of the disposition and communication sub-aspects, it can be concluded that the Government, especially the Ministry of Transportation as the policymaker for the delivery of infectious materials by air, has not conducted socialization related to regulations in securing the delivery of infectious materials for COVID-19, this is due to the lack of good communication and coordination between ministries, it is hoped that the Ministry of transportation will carry out thorough socialization with the Ministry or institutions related to the delivery of dangerous infectious materials because communication activities have only been carried out with the Ministry of Health as a unit that is directly related to the Ministry and in the context of a Focus Group Discussion (FGD) at the invitation of the Ministry of Health initiated by the Puslitbang BTDK. However, Puslitbang BTDK has carried out socialization related to packaging techniques and has also conducted training to COVID-19 network laboratories for the delivery of infectious materials, especially COVID-19. It is also known that there is no supervision of the implementation of the policy on the delivery and packaging of COVID-19 infectious materials so that there are still shipments that do not follow the applicable regulations and have been set, and it seems that the imposition of sanctions is also not carried out optimally.

Fourth, from the social sub-aspect, there is still a negative stigma in society regarding the delivery of COVID-19 infectious materials. This happened to several specimen delivery officers in the area and airport officers, but after almost two years of COVID-19, the negative stigma of the community began to decrease. Furthermore, in terms of the economic sub-aspects that Indonesia experienced a recession that almost caused an economic crisis. This, of course, also affects the amount of the state budget (APBN) that must be spent and state revenues. This condition affects the price of the COVID-19 specimen shipping container material that must be used. If the material or container is adjusted to WHO/IATA standards, the purchasing budget will be higher while the Government asks Ministries/Agencies to carry out budget efficiency.

The strategy that has been carried out by Puslitbang BTDK to be able to minimize the obstacles that arise in the implementation of the Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials during the health crisis (pandemic) are as follows: with packaging needs that have not yet been certified but can be used properly and function according to WHO/IATA guidelines. Then, Puslitbang BTDK makes SOPs for acceptance that is applied and adapted to WHO standards for use in the internal environment as well as being obeyed by specimen senders from outside Puslitbang

BTDK. As well as providing socialization to regional referral laboratories through online applications for shipping methods, especially packaging using containers that are not standardized by WHO but have functions according to WHO standards and can prevent work accidents. After knowing the inhibiting factors and the strategies that have been carried out in the implementation of Safety Policy For The Delivery And Acceptance Of COVID-19 Infectious Materials at Puslitbang BTDK, it is necessary to develop policy and technical strategies in securing infectious materials not only during a health crisis such as a pandemic but in normal conditions and also as preparation for other outbreaks/pandemics. in the form of policy, recommendations addressed to the Ministry of Health and the Ministry of Transportation which are the main stakeholders in the formulation of infectious material safety policies in Indonesia.

1. The Ministry of Health and the Ministry of Transportation formulate a new regulation, in this case, which can be a joint regulation related to securing the delivery and receipt of infectious materials in Indonesia. Triple packaging with materials according to the SE should be a consideration for the Ministry of Health and the Ministry of Transportation (land, sea, and air) in formulating evidence-based policies so that the joint regulations that will be made include:

2. The regulation does not only focus on shipping by air but also includes land and sea shipping.

3. The packaging/container may refer to the WHO/IATA guidelines by taking into account the existing conditions in the regions in Indonesia, as stated in Circular Letter Directorate General of Civil Aviation No. 22 of 2020.

4. Minimum standards of packing and shipping can still be implemented to achieve the goal of providing security for consignors and safety for samples being sent.

5. The regulations do not only regulate delivery but also regulate when it is received, because as we know, the contents in the container/package are dangerous infectious materials, so the infectious material security policy covers the whole process.

6. Clarified for training Certified packaging of hazardous infectious materials is not only required for airlines (aircraft operators) and cargo services but also sending staff and receiving hazardous infectious materials.

7. Supervision of the safety of the transportation of hazardous materials covers the entire process starting from packing, shipping, and receiving.

8. The application of sanctions in the event of a violation is further clarified in terms of the process of transporting hazardous materials starting from packaging, shipping, and receiving.

9. The existence of standard WHO/IATA standard packaging containers which are expensive and difficult to obtain in regions in Indonesia, so it needs to be encouraged to replace / as an alternative to triple packaging containers that originally used WHO/IATA standards with high costs to local products with Indonesian National Standards (SNI) which have the same quality and benefits. These local products can be made in Indonesia with collaboration between the Government and the private sector so that an effective and efficient shipping container can be realized.

10. The Ministry of Health encourages an increase in the number of laboratories for examining Infectious Diseases, especially COVID-19 and other Infectious Diseases in every Region of Indonesia so that the transmission of infectious material specimens between laboratories can be suppressed. This hall can be done by providing the budget for the construction of new laboratories/upgrading regional laboratories. Besides that, capacity building, skills, and abilities of laboratory personnel can also be increased.

11. The Ministry of Health has developed various methods of detecting COVID-19 and other infectious diseases so that they can be used in remote areas of Indonesia, with faster detection, transmission, and spread of disease can be detected quickly so that cases of New Emerging and Re-Emerging infectious diseases such as COVID-19 can be detected. COVID-19 can be lowered. The development of the method can involve the collaboration of researchers and laboratory personnel throughout Indonesia, both in the Government and the private sector, and does not rule out the possibility of opening collaboration with related foreign parties.

12. Expanding the target of socialization of regulations for securing the delivery and receipt of hazardous materials from the Ministry of transportation so that they can be understood and, if needed, socialization and forums for collaboration and collaboration across ministries/agencies that are also affected by the existence of these regulations.

13. The Ministry of Health, through the National Institute of Health Research and Development (NIHRD), has made a Standard Operating Procedure (SOP) on the receipt and delivery of infectious materials, especially COVID-19, and disseminated

it thoroughly to the Network Laboratory in Indonesia. The purpose of this SOP is to provide a technical basis for action and a common perception regarding the delivery and receipt of infectious materials, especially COVID-19, and can be used post-pandemic.

14. The Ministry of Transportation and the Ministry of Health evaluate and monitor the policies that have been implemented. This is done as a reference for the formulation and determination of effective and targeted policy implementation. The monitoring and evaluation strategy that can be carried out is simple, namely conducting an online survey regarding the implementation of the policy for sending COVID-19 infectious materials or other infectious materials to all infectious disease laboratories in Indonesia.

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